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SRI LANKA

Using Manufacturing By-Products to Save Energy

USAID/US-AEP exchange visit introduces a new technology that generates biogas from wastewater...

Challenge

Lion Brewery Ceylon Limited is among the leading breweries of Sri Lanka, manufacturing its brand name beer and holding a franchise to produce Carlsberg beer. Lion's facilities are located along the Kelani River, which is the major source of drinking water for the capital Colombo and roughly 3 million people living in the greater metropolitan area.

To ensure the health of these downstream consumers, proper disposal of the brewery's wastewater is critical. The company pays high energy costs to operate its wastewater treatment system to meet international standards, and disposing wastewater containing spent grain and other by-products to meet these standards was a particularly big challenge.



Initiative

Dr. Chad Kanagachandran, the brewery's special projects manager, began investigating the concept of producing bio-fuel from the products of the beer making process. USAID/US-AEP supported a visit to India by Dr. Kanagachandran to learn about the technology used by Lars Enviro Private Ltd, a subsidiary of the U.S. based Larson Engineering.

On his return Dr. Kanagachandran helped Lion Brewery develop a pilot system that combines spent grain with untreated wastewater. This "wastewater tea" is sent to an anaerobic treatment tank where microbes consume the waste in the water and produce methane fuel, benefiting both the company and the environment.

Results

The pilot test converted about 1 percent of Lion Brewery's total waste into a fuel source. After a successful test, the brewery is implementing a larger application to optimize the process and generate data needed to prepare for full-scale implementation at the facility. The system will reduce the solid waste generated by the plant, decrease the volume of spent grain by up to 40 percent, and reduce fuel costs by 30 percent. The Lion Brewery expects that once the full scale facility is in operation, it will result in approximately Rs 8 million (\$80,000) in annual savings.

In addition to producing biogas from the processed waste, Dr. Kanagachandran's training has inspired him to install a recycling plant at the brewery that converts waste yeast sludge into a supplementary animal feed high in protein, vitamins and minerals, increasing the efficiency and further reducing the quantity of wastewater that has to be disposed of.

"USAID support gave me the opportunity to learn about anaerobic wastewater treatment systems in distilleries, and helped me to design the process for breweries to treat a combination of wastewater and spent grain."

**Dr. Chad Kanagachandran,
Special Projects Manager,
Lion Brewery**